Notice No.3

Rules and Regulations for the Classification of Naval Ships, January 2016

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Issue date: December 2016

Amendments to	Effective date	Mandatory Instrument
Volume 1, Part 1, Chapter 2, Section 3	1 January 2017	
Volume 1, Part 1, Chapter 3, Sections 4 & 5	1 January 2017	X
Volume 1, Part 3, Chapter 2, Section 4	1 January 2017	
Volume 1, Part 3, Chapter 5, Sections 3, 5, 8 & 9	1 January 2017	
Volume 1, Part 4, Chapter 1, Section 5	1 January 2017	
Volume 1, Part 6, Chapter 6, Section 4	1 January 2017	

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Volume 1, Part 1, Chapter 2
Classification Regulations

■ *Section 3*
Character of Classification and Class notations

3.5 Ship type notations

3.5.9 **AIR**. This is a mandatory notation for all vessels operating aircraft, *see Vol 1, Pt 1, Ch 2, 1.1 Framework of Classification 1.1.11*.

3.5.10 **LA**. This is a mandatory notation for all vessels that have lifting appliances fitted on board which are considered by LR to be essential for the vessel to fulfil its primary operational role, *see Vol 1, Pt 1, Ch 2, 1.1 Framework of Classification 1.1.12*.

3.9 Machinery and Engineering Systems notations

(*Part only shown*)

3.9.1 The following class notations are associated with the machinery construction and arrangement, and may be assigned:

RAS(B) This notation will be assigned where a vessel has replenishment at sea systems that enable operations abeam only. It also denotes that the arrangements are in accordance with LR Rules.

(NT) This notation will be assigned in addition to a **RAS( )** notation where a vessel complies with NATO replenishment at sea requirements.

PRM This notation may be assigned when the provision refrigeration machinery and systems have been arranged, installed and tested in accordance with LR's Rules.

AL-SAFE This notation (Cyber-enabled Design) will be assigned where specific aspects of the ship have been designed and maintained in accordance with the requirements of the LR document *ShipRight Procedure – autonomous ships*.

AL-MCM This notation (Cyber-enabled Machinery Condition Monitoring) will be assigned where specific aspects of the ship are designed and maintained in accordance with the requirements of the LR document *ShipRight Procedure – autonomous ships* in addition to the requirements of the **MCM** notation.

AL-MCBM This notation (Cyber-enabled Machinery Condition-Based Maintenance) will be assigned where specific aspects of the ship are designed and maintained in accordance with the requirements of the LR document *ShipRight Procedure – autonomous ships* in addition to the requirements of the **MCBM** notation.

3.9.2 The following class notations are associated with the machinery control and automation, and may be assigned as considered appropriate by the Classification Committee:

UMS This notation may be assigned when the arrangements are such that the ~~ship~~ unit can be operated with the ~~M~~machinery ~~S~~spaces ~~U~~unattended. It denotes that the control engineering equipment has been arranged, installed and tested in accordance with LR's Rules, or is equivalent thereto.

CCS This notation may be assigned when the arrangements are such that the machinery may be operated with continuous supervision from a ~~C~~centralised ~~C~~control ~~S~~station. It denotes that the control engineering equipment has been arranged, installed and tested in accordance with LR's Rules, or is equivalent thereto.

ICC This notation may be assigned when the arrangements are such that the control and supervision of the ship operational functions are computer based. It denotes that the control engineering equipment has been arranged, installed and tested in accordance with LR's Rules, or is equivalent thereto.

IP This notation may be assigned to a ship classed with LR when the arrangements of the machinery are such that the propulsion equipment and all other machinery for Mobility and/or Ship Type systems, *see Vol 2, Pt 1, Ch 1, 3 Engineering system designation*, is integrated with the power unit for operation under all normal sea-going and manoeuvring conditions. The system is to be bridge controlled and the propulsion equipment is to incorporate an emergency means of propulsion in the event of failure in the prime mover. It also denotes that the machinery and control equipment have been arranged, installed and tested in accordance with LR's Rules.

3.9.3 The following class notation is associated with vessels capable of being operated unmanned, and may be assigned as considered appropriate:

Unmanned Assigned when a vessel is designed and constructed such that it may be operated unmanned, i.e. without crew, passengers or other persons on board.

Existing paragraphs 3.9.3 *and* 3.9.4 *have been renumbered* 3.9.4 *and* 3.9.5.

3.10 Other notations

3.10.1 **LAP.** This optional special feature Class notation will be assigned to the ship in respect of the lifting appliances fitted which are designed and built in accordance with LR's *Code for Lifting Appliances in a Marine Environment July 2016* (LAME) or equivalent standard, but where it is not mandated by the LA notation, *see ~~Vol 1, Pt 1, Ch 2, 1.1 Framework of Classification 1.1.12~~ Vol 1, Pt 1, Ch 2, 3.5 Ship type notations 3.5.10*. This notation will be assigned in association with a Register of Lifting Appliances listing the appliances covered. The Register of Lifting Appliances is the responsibility of the Owner and should include the following lifting appliances and positions, ~~where fitted~~ as appropriate:

(a) Bow, side and stern doors serving as ramps and/or serve to provide watertight integrity of the ship.
(b) Vehicle ramps.
(c) Movable decks.
(d) Stores lifts~~and munitions lifts~~.
(e) Cranes.
(f) Davits.
(g) Replenishment at sea ~~positions~~ equipment.
(h) Engineers lifting ~~positions~~ arrangements.
(i) Eye plates and securing devices.
(j) Miscellaneous lifting ~~positions~~ arrangements.
(k) Towed body attachments.

Lifting Appliances for handling explosives stores or munitions can be brought within the scope of the LAP (or LA) notation but the *Code for Lifting Appliances in a Marine Environment July 2016* will need to be augmented with Naval Administration requirements.

The notation will be retained so long as the appliances are found upon examination by LR at the prescribed surveys to be maintained in accordance with the standard.

Volume 1, Part 1, Chapter 3
Periodical Survey Regulations

■ *Section 4*
Docking Surveys and In-water Surveys

4.2 Docking Surveys

4.2.5 The sea connections, scuppers and sanitary discharges, ~~and overboard discharge valves,~~ their attachments to the hull and the gratings at the sea inlets are to be examined. Where applicable, pressure testing of the rudder may be required if deemed necessary by the Surveyor.

■ *Section 5*
Special Survey – Hull requirements

5.3 Examination and testing – General

5.3.10 Ship side valves (i.e. sea connections, scuppers and sanitary discharges) are to be tested once reassembled.

Volume 1, Part 3, Chapter 2
Ship ~~design~~ Design

■ *Section 4*
Bulkhead arrangements

~~4.9 Cofferdams~~

~~4.9.1 Tanks carrying fuel oil or lubricating oil are to be separated by cofferdams from those carrying fresh water. Cofferdams are to be fitted between freshwater tanks and black or grey water tanks.~~

~~4.9.2 Lubricating oil tanks are also to be separated by cofferdams from those carrying fuel oil unless:~~
~~(a) Common boundaries of lubricating oil and fuel oil tanks have full penetration welds.~~

~~(b) The tanks are arranged such that the fuel oil tanks are not generally subjected to a head of oil in excess of that in the adjacent lubricating oil tanks.~~

~~4.9.3 If fuel oil tanks are necessarily located within or adjacent to the machinery spaces, their arrangement is to be such as to avoid direct exposure of the bottom from rising heat resulting from a machinery or hazardous space fire.~~

~~4.9.4 Adequate access is to be provided to all parts of the cofferdams for future maintenance, surveys and repairs. The edges of openings are to be smooth.~~

4.9 Separation and protection of tanks

4.9.1 Where the cross contamination of liquids stored in adjacent tanks is hazardous to machinery, these tanks are to be separated by cofferdams. Hazardous pairings of liquid consumables include but are not limited to the following:
(a) Fuel oil and lubricating oil
(b) Fuel oil and technical water (e.g. feedwater)
(c) Lubricating oil and technical water
(d) Fuel oil and urea.

4.9.2 Tanks carrying liquids for the purposes of fire-fighting (e.g. foam concentrate) are to be separated by cofferdams from adjacent tanks containing liquid fuels.

4.9.3 Tanks carrying fresh water for human consumption (potable water) are to be separated by cofferdams from adjacent tanks containing liquid substances harmful to human health. Fresh water for other purposes and water ballast are not considered harmful.

4.9.4 Where a cofferdam as specified in *Vol 1, Pt 3, Ch 2, 4.9 Separation and protection of tanks 4.9.1* is impracticable, special consideration may be given, subject to the arrangements complying with the following:
(a) The thickness of common boundary plates is increased by 1 mm
(b) Common boundaries have full penetration welds.

4.9.5 Where a corner to corner situation occurs, tanks are not considered to be adjacent.

4.9.6 Where fitted, cofferdams are to be suitably ventilated, provided with a suitable drainage arrangement, *see* V*ol 2, Pt 7, Ch 2, 3.2 Tanks and Cofferdams*, and be of sufficient size to allow proper inspection, maintenance and safe evacuation.

4.9.7 If fuel oil tanks are necessarily located within or adjacent to the machinery spaces, their arrangement is to be such as to avoid direct exposure of the bottom from rising heat resulting from a machinery or hazardous space fire.

Volume 1, Part 3, Chapter 5
Anchoring, Mooring, Towing, Berthing, Launching, Recovery and Docking

■ *Section 3*
Service area factors

3.2 Service Areas SA1, SA2, SA3, SA4, SAR

3.2.1 For ships designed to operate in any service area, the equipment is to be in accordance with the requirements of *Tables 5.4.1 Equipment - HHP Bower anchors and chain cables* and *Table 5.6.1 Equipment - Kedge anchors and wires, towlines and mooring lines*.

3.2.2 For ships operating in service areas SA4 and SAR, the equipment may be specially considered accounting for the environmental condition for the anticipated service, i.e. wind speed, current and water depth.

■ *Section 5*
Anchor cable

5.1 General

5.1.2 An easy lead of the cables from the windlass to the anchors and chain lockers is to be arranged.

5.4 Cable clench

5.4.1 ~~Provision is to be made for securing the inboard ends of the cables to the structure. This attachment should have a working strength of not less than 63,7 kN or 10 per cent of the breaking strength of the chain cable, whichever is the greater, and the structure~~

~~to which it is attached is to be adequate for this load. Attention is drawn to the advantages of arranging that the cable may be slipped from an accessible position outside the chain cable locker. The proposed arrangement for slipping the chain cable, if constructed outside the chain locker, must be made watertight.~~ Provision is to be made for securing the bitter end of the chain cable to the ship structure. The fastening for securing the bitter end is to be capable of withstanding a force of not less than 15 per cent and not greater than 30 per cent of the minimum breaking strength of the as fitted chain cable. It is to be provided with suitable means such that, in case of emergency, the chain cable may be easily slipped to sea from an accessible position outside the chain cable locker. Where the mechanism for slipping the chain cable to sea penetrates the chain locker bulkhead, this penetration is to be made watertight.

5.4.2 Alternatively the cable end connection may be accepted where it has been designed and constructed to a recognised National or International Standard.

5.4.3 The cable clench supporting structure is to be adequately stiffened in accordance with the breaking strength of the fastening provided.

5.5 Cable stopping and release arrangements

5.5.1 It is recommended that suitable bow chain stoppers be provided. ~~The scantlings of these chain stoppers are outside the scope of the Rules, however the structure in way is to be designed with due regard to the applied loading. Support under chain stopping arrangements is to be to the satisfaction of the Surveyor.~~ Where cables pass through stoppers, these stoppers are to be manufactured from ductile material and be designed to minimise the possibility of damage to, or snagging of, the cable. They are to be capable of withstanding without permanent deformation a load equal to 80 per cent of the Rule breaking load of the cable passing over them. The corresponding stresses induced in the supporting structure are not to exceed the allowable values given in *Table 5.5.1 Allowable stresses in chain stopper supporting structure*.

Table 5.5.1 Allowable stresses in chain stopper supporting structure

	Permissible stress N/mm^2
Normal stress	$1{,}00\ \sigma_0$
Shear stress	$0{,}58\ \sigma_0$
Symbols	
σ_0 = specified minimum yield stress, N/mm^2	

■ *Section 8*
Windlass and capstan design and testing

8.2 Windlass design

8.2.8 The maximum stress from load cases stated in *Table 5.8.2 Design load cases for the windlass ~~and chainstopper~~* is not to exceed the limits stated in *Table 5.8.3 Permissible stress for design load cases*.

Table 5.8.2 Design load cases for the windlass ~~and chainstopper~~

Load case	Condition	Note
1	Continuous pull	*See Vol 1, Pt 3, Ch 5, 8.2 Windlass design 8.2.1*
2	Overload pull	*See Vol 1, Pt 3, Ch 5, 8.2 Windlass design 8.2.1*
3	Brake holding load	*See Vol 1, Pt 3, Ch 5, 8.2 Windlass design 8.2.1*

■ *Section 9*
Structural details

9.1 General

~~9.1.1 An easy lead of the cables from the windlass to the anchors and chain lockers is to be arranged. Where cables pass over or through stoppers, these stoppers are to be manufactured from ductile material and be designed to minimise the probability of damage to, or snagging of, the cable. They are to be capable of withstanding without permanent deformation a load equal to 80 per cent of the Rule breaking load of the cable passing over them.~~

Existing sub-Sections 9.2 to 9.5 have been renumbered 9.1 to 9.4.

Volume 1, Part 4, Chapter 1
Military Design

■ *Section 5*
Military design requirements

5.5 Crane support arrangements

5.5.8 The support arrangements for life-saving appliance davits and cranes are, in general, to be in accordance with *Pt 3, Ch 9, 6.5 Support structure for Life-Saving Appliances* of the *Rules and Regulations for the Classification of Ships July 2016.*

5.5.9 Where life-saving appliance davits and cranes are used for additional military operations, the load cases are to be specially considered and the supporting deck structure assessed against these additional load cases. Consideration is to be given to the possibility of fatigue arising due to high cyclic loading.

Volume 1, Part 6, Chapter 6
Material and Welding Requirements

■ *Section 4*
Welded joints and connections

4.5 Fillet welds

(*Part only shown*)

Table 6.4.1 Weld factors

Item	Weld factor	Remarks
(1) General application:		except as required below
Shell envelope boundary, including sea chests and hull penetrations	Full penetration	For hull penetrations, fitted with a flange or other support, equivalent arrangements may be considered.
Watertight plate boundaries	0,34	
Non-tight plate boundaries	0,13	
Longitudinals, frames, beams, and other secondary members to shell, deck or bulkhead plating	0,10	
	0,13	in tanks ~~in way of end connections~~
	0,21	in way of end connections
Panel stiffeners, etc	0,10	
Overlap welds generally	0,27	
Longitudinals of the flat-bar type to plating		*See Vol 1, Pt 6, Ch 6, 4.5 Fillet welds 4.5.5*
(2) Bottom construction in way of holds or tanks:		
Non-tight centre girder:		
to keel	0,27	
to inner bottom	0,21	no scallops
Non-tight boundaries of floors, girders and brackets	0,21	in way of 0,2 x span at ends ~~in way of brackets at lower end of main frame~~
	0,27	in way of brackets at lower end of main frame
Watertight bottom girders	0,34	
Connection of girder to inner bottom in way of longitudinal bulkheads supported on inner bottom	0,44	
Inner bottom longitudinals or reverse frames	0,13	
Connection of floors to inner bottom in way of bulkheads supported on inner bottom. The supporting floors are to be continuously welded to the inner bottom	0,44	~~weld~~ Weld size based on floor thickness ~~weld material compatible with floor material~~ Weld material compatible with floor material

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